D-21266

IN THE CLAIMS

1. (Currently amended) An asymmetric Group 8 (VIII) metallocene of the general formula CpMCp',

where

M is a metal selected from the group consisting of Ru, and Os ~~and Fe~~;

Cp is a first substituted cyclopentadienyl or indenyl moiety that includes at least one substituent group D_1;

Cp' is a second substituted cyclopentadienyl or indenyl moiety that includes at least one substituent group D_1';

wherein

D_1 is different from D_1';

D_1 is selected from the group consisting of:

X;

$C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C{=}O)C_{a1}H_{b1}X_{c1}$; and

$C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$,

where

X is F, Cl, Br, I or NO_2;

a1 is an integer from 2 to 8;

b1 is an integer from 0 to 2(a1)+1 – c1;

c1 is an integer from 0 to 2(a1)+1 – b1;

b1 + c1 is at least 1;

a2 is an integer from 0 to 8;

b2 is an integer from 0 to 2(a2) + 1 – c2;

c2 is an integer from 0 to 2(a2) + 1 – b2; and

~~D1'~~D_1' is selected from the group consisting of:

X;

$C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$; and

$C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$,

where,

X is Fl, Cl, Br or I or NO_2;

a1 is an integer from 1 to 8;

b1 is an integer from 0 to 2(a1)+1 – c1;

c1 is an integer from 0 to 2(a1)+1 – b1;

b1 + c1 is equal to or greater than 1;

a2 is an integer from 0 to 8;

b2 is an integer from 0 to 2(a2)+1 – c2;

c2 is an integer from 0 to 2(a2)+1 – b2; and

b2 + c2 is equal to or greater than 1.

2. (Original) The asymmetric metallocene of Claim 1 wherein either or both of Cp and Cp' includes at least one additional substituent, D_x, selected from the group consisting of:

X;

$C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)OC_{a1}H_{b1}X_{c1}$; and

$C_{a2}H_{b2}X_{c2}O(C=O)C_{a1}H_{b1}X_{c1}$,

where,

X is Fl, Cl, Br or I or NO_2;

a1 is an integer from 0 to 8;

b1 is an integer from 0 to 2(a1)+1 – c1;

c1 is an integer from 0 to 2(a1)+1 – b1;

b1 + c1 is equal to or greater than 1;

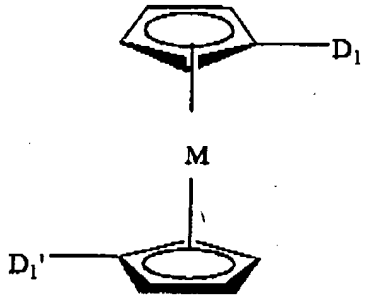
a2 is an integer from 0 to 8;

b2 is an integer from 0 to 2(a2)+1 – c2;

c2 is an integer from 0 to 2(a2)+1 – b2; and

b2 + c2 is greater to or equal to 1.

3. (Currently amended) A metallocene compound represented by the following molecular formula:



where

M is selected from the group consisting of Ru, and Os ~~and Fe~~;

D_1 is different from D_1' and D_1 and ~~D1'~~ D_1' are independently selected from the group consisting of:

X;

$C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$; and

$C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$,

where

X is F, Cl, Br, I or NO_2;

a1 is an integer from 1 to 8;
b1 is an integer from 0 to 2(a1)+1−c1
c1 is an integer from 0 to 2(a1)+1 − b1;
b1 + c1 is at least 1;
a2 is an integer from 0 to 8;
b2 is an integer from 0 to 2(a2) + 1 − c2; and
c2 is an integer from 0 to 2(a2) + 1 − b2.

4. (Original) The metallocene compound of Claim 3, wherein D_1 is methyl and D_1' is selected from the group consisting of ethyl, propyl, isopropyl, n-butyl, sec-butyl and tert-butyl.

5. (Original) The metallocene compound of Claim 3, wherein D_1 is ethyl and D_1' is selected from the group consisting of propyl, isopropyl, n-butyl, sec-butyl and tert-butyl.

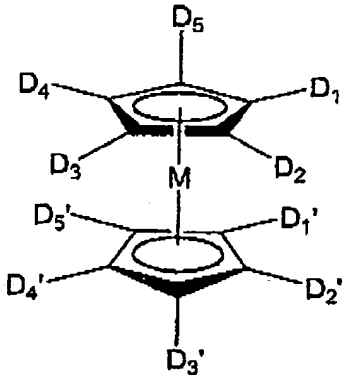
6. (Original) The metallocene compound of Claim 3, wherein D_1 is propyl and D_1' is selected from the group consisting of isopropyl, n-butyl, sec-butyl and tert-butyl.

7. (Original) The metallocene compound of Claim 3, wherein D_1 is isopropyl and D_1' is selected from the group consisting of n-butyl, sec-butyl and tert-butyl.

8. (Original) The metallocene compound of Claim 3, wherein D_1 is n-butyl and D_1' is selected from the group consisting of sec-butyl and tert-butyl.

9. (Original) The metallocene compound of Claim 3, wherein D_1 is sec-butyl and D_1' is tert-butyl.

10. (Currently amended) A compound of the general formula,



where

M is selected from the group consisting of Ru, Os and Fe;

D_1, D_1' and D_2 are different and each is independently selected from the group consisting of:

X;

$C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$; and

$C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$.

where

X is F, Cl, Br I or NO_2;

a1 is an integer from 1 to 8;

b1 is an integer from 0 to 2(a1)+1 – c1

c1 is an integer from 0 to 2(a1)+1 – b1;

b1 + c1 is at least 1;

a2 is an integer from 0 to 8;

b2 is an integer from 0 to 2(a2) + 1 – c2;

c2 is an integer from 0 to 2(a2) + 1 – b2; and

each of ~~D_2~~, D_3, D_4, D_5, D_2', D_3', D_4', and D_5' is independently selected from

the group consisting of:

X;

$C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)C_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}OC_{a1}H_{b1}X_{c1}$;

$C_{a2}H_{b2}X_{c2}(C=O)OC_{a1}H_{b1}X_{c1}$; and

$C_{a2}H_{b2}X_{c2}O(C=O)C_{a1}H_{b1}X_{c1}$,

where,

X is F, Cl, Br, I or NO_2;

a1 is an integer from 0 to 8;

b1 is an integer from 0 to 2(a1)+1 – c1;

c1 is an integer from 0 to 2(a1)+1 – b1;

b1 + c1 is equal to or greater than 1;

a2 is an integer from 0 to 8;

b2 is an integer from 0 to 2(a2)+1 – c2;

c2 is an integer from 0 to 2(a2)+1 – b2;

b2 + c2 is equal to or greater than 1.

11. (New) An asymmetric Group 8 (VIII) metallocene of the general formula CpMCp',

where

M is a metal selected from the group consisting of Ru, Os and Fe;

Cp is a first substituted cyclopentadienyl or indenyl moiety that includes at least one substituent group D_1;

Cp' is a second substituted cyclopentadienyl or indenyl moiety that includes at least one substituent group D_1';

wherein

D_1 is different from D_1';

D_1 and D_1' are independently selected from the group consisting of:

X;

$C_{a1}H_{b1}$; and

$C_{a2}H_{b2}(C=O)C_{a1}H_{b1}$;

where

X is F, Cl, Br or I;

a1 is an integer from 1 to 4;

b1 is an integer 2(a1)+1;

a2 is an integer from 0 to 2; and

b2 is an integer 2(a2).

12. (New) The asymmetric metallocene of Claim 11 wherein either or both of Cp and Cp' includes at least one additional substituent, D_x, selected from the group consisting of:

X;

$C_{a1}H_{b1}$; and

$C_{a2}H_{b2}(C=O)C_{a1}H_{b1}$;

where

X is F, Cl, Br or I;

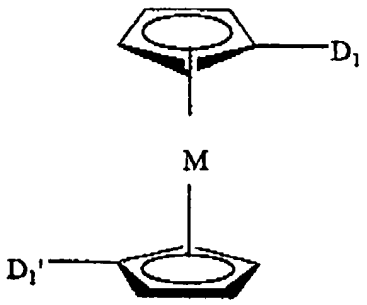
a1 is an integer from 0 to 4;

b1 is an integer 2(a1)+1;

a2 is an integer from 0 to 2; and

b2 is an integer 2(a2).

13. (New) A metallocene compound represented by the following molecular formula:



where

M is selected from the group consisting of Ru, Os and Fe;

D_1 and D_1' are different and are independently selected from the group consisting of:

X;

$C_{a1}H_{b1}$; and

$C_{a2}H_{b2}(C=O)C_{a1}H_{b1}$;

where

X is F, Cl, Br or I;

a1 is an integer from 1 to 4;

b1 is an integer 2(a1)+1;

a2 is an integer from 0 to 2; and

b2 is an integer 2(a2).

14. (New) The metallocene compound of Claim 13, wherein D_1 is methyl and D_1' is selected from the group consisting of ethyl, propyl, isopropyl, n-butyl, sec-butyl and tert-butyl.

15. (New) The metallocene compound of Claim 13, wherein D_1 is ethyl and D_1' is selected from the group consisting of propyl, isopropyl, n-butyl, sec-butyl and tert-butyl.

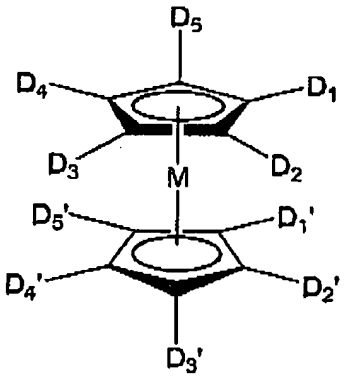
16. (New) The metallocene compound of Claim 13, wherein D_1 is propyl and D_1' is selected from the group consisting of isopropyl, n-butyl, sec-butyl and tert-butyl.

17. (New) The metallocene compound of Claim 13, wherein D_1 is isopropyl and D_1' is selected from the group consisting of n-butyl, sec-butyl and tert-butyl.

18. (New) The metallocene compound of Claim 13, wherein D_1 is n-butyl and D_1' is selected from the group consisting of sec-butyl and tert-butyl.

19. (New) The metallocene compound of Claim 13, wherein D_1 is sec-butyl and D_1' is tert-butyl.

20. (New) A compound of the general formula,



where

M is selected from the group consisting of Ru, Os and Fe;

D_1, D_2 and D_1' are different and are independently selected from the

group consisting of:

X;

$C_{a1}H_{b1}$; and

$C_{a2}H_{b2}(C=O)C_{a1}H_{b1}$;

where

X is F, Cl, Br or I;

a1 is an integer from 1 to 4;

b1 is an integer 2(a1)+1;

a2 is an integer from 0 to 2; and

b2 is an integer 2(a2); and

each of D_2, D_3, D_4, D_5, D_2', D_3', D_4', and D_5' is independently selected from the group consisting of:

X;

$C_{a1}H_{b1}$; and

$C_{a2}H_{b2}(C=O)C_{a1}H_{b1}$;

where

X is F, Cl, Br or I;

a1 is an integer from 0 to 4;

b1 is an integer 2(a1)+1;

a2 is an integer from 0 to 2; and

b2 is an integer 2(a2).

21. (New) The metallocene compound of Claim 14 which comprises 1-ethyl-1'-methylruthenocene.